MODIS TECHNICAL TEAM MEETING

Thursday, September 28, 2000
Building 33, Room E125

Vince Salomonson chaired the MODIS Technical Team meeting. Present were Skip Reber, Bob Murphy, Mike Roberto, Dorothy Hall, Bruce Ramsay, Harry Montgomery, Eric Vermote, Chris Justice, Ed Masuoka, Steve Kempler, and Barbara Conboy, with David Herring and Rebecca Lindsey taking minutes.

1.0 SCHEDULE OF EVENTS

· SPIE's Remote Sensing Japan 2000 Sendai, Japan	October 9-12
· VENICE-2000 (Oceans from Space) Venice, Italy	October 9-13
· Ocean Optics XV Monaco	October 16-20
· PORSEC 2000 Goa, India	December 5-8
· AGU Fall Meeting San Francisco, CA	December 15-19

2.0 MEETING SUMMARY

2.1 Aqua Update

Mike Roberto reported that the MODIS recovery team is in the process of putting together a report on instrument failure and recovery, and current status. A draft should be finished at the end of the week; it is a joint report between Santa Barbara Remote Sensing and Goddard Space Flight Center. The team is uncertain at this time about the cause of the interrupts. They are considering a possible resistor network failure as well as possible problems related to the data formatter computer. The fabrication process for the resistor network was suspect. However, resistor networks of the same lot date code were tested here at Goddard and found to be flight worthy. Several factors point toward noise sensitivity at low temperatures causing problems with the data formatter computer at the instrument level or higher level of integration.

Currently no changes are planned for the Flight Model 1 (FM1) Aqua MODIS because the team has not yet determined the specifics and consequences of any change. We could raise the Main Electronics Module (MEM) temperature, but for every two-degree increase in the electronics temperature, the optics temperature

would increase by one degree. This is undesirable because increasing optics temperature increases the infrared background, reducing the dynamic range. We aren't even sure that a temperature increase would prevent this problem on the Aqua MODIS. The recovery team is seeking additional information from Dynex (the computer vendor) that may help pinpoint the problem. The team has also been in touch with Vishay, the resistor network vendor.

Depending on the final findings of the recovery team, decisions could be made to increase the MEM temperature or provide the option of increasing the MEM temperature on orbit. Also, the software patches applied to the Protoflight Model (PFM) MODIS on Terra could be added to the flight software for the Aqua MODIS before launch. The Aqua launch is currently planned for July 2001.

Salomonson asked if there was any news on switching to the Terra MODIS B-side electronics, but no one had heard anything. He indicated he still had an action item to draft a memo to Ghassem Asrar requesting the change.

2.2 MCST Update

Harry Montgomery showed some viewgraphs (See Attachment: attach_9-28-00.ppt) describing MODIS cross-talk between bands in the Short-wave Mid-wave InfraRed (SWMIR) Focal Plane Array (FPA); this cross-talk was measured using the SRCA (see Attachment 1). For Itwk of 79 the cross-talk is primarily negative, but for Itwk at 110 the cross-talk is both positive and negative (ripple). As a precursor to a possible correction scheme, MCST determined the influence coefficients between the sender and receiver bands within the SMWIR FPA. As the next step, MCST took a model of the SRCA signal plus the influence coefficients, computed the effects of cross-talk, and then compared the results with measured SRCA data. Montgomery showed graphs that indicate this approach produces reasonable agreement. Their next step will be to use an actual scene and see if these corrections improve it.

Vermote asked if they would simply have to give up on one of the two sub-samples. One option is to keep the present Itwk/Vdet (110/226) setting and
1.) use both sub-samples because they are equal,
1.) have constant slope of the MWIR calibration curves,
2.) have ripple cross-talk, which is more difficult to correct.

Another options is to change the Itwk/Vdet to 79/110, which would result in
1.) unequal signals for the two sub-samples, requiring two separate calibration curves,
2.) negative cross-talk (ripple cross-talk would disappear),
3.) the need for a second order term to correct for the gain change with scene temperature for the MWIR calibration curves.

Montgomery thinks the second option is better.

Salomonson asked if the lunar look data were helpful. Montgomery said that MODIS has a different behavior in the lunar look data sets than it has with the SRCA data sets. The lunar data frequently is saturated for the detectors pointing onto the moon, but the radiance range for the lunar data is not similar to that of the earth scene or SRCA. The differences in response are not explainable by simple linearity considerations. Consequently, with the present level of understanding, we face great uncertainty in the utility of a cross-talk correction scheme.

Vermote stated that they know what impacts sub-sample differences have on the science products. Vermote said the impact of this cross-talk will be more difficult to assess, and he hopes a correction approach based on SRCA results will be satisfactory, enabling them to keep sub-sample difference minimal.

Montgomery suggested that the two sub-samples should be calibrated as if they are separate bands. For any operating configuration where the sub-samples function as useful radiometers, the Level 1B products would show no sub-sample differences, even if the Level 1A products might show great sub-sample differences.

2.3 Software Update

Kempler reported that the GDAAC has processed three 8-day weeks of 98% or better global coverage. They are current through September 12. The GDAAC calls 98% data coverage a “complete day”. If ten or more granules are missing, then it is a “failed day”. They are averaging about a week’s (7days) worth of processing each week; they expect to come up to 8 days/week once they have stopped special processing of SAFARI granules, which they will complete in 1 or 2 days. Their current strategy is not to proceed to new days until they have a complete day.

Reber asked if we know the history of data delivery by granule from EDOS to THE GDAAC to MODAPS. He wondered how often the GDAAC had to reorder

the data due to missing granules. Reber noted that ESDIS can't track data delivery per granule because they don't know the size of a granule; instead, they report on data delivery in 2-hour chunks. He asked if the GDAAC can track the number of granules per unit time. Murphy commented that EDOS report might say they delivered 98% of granules, but there may be holes in the data within each granule so that number would be misrepresentative. Reber indicated we should compare EDOS reports to GDAAC reports to see if delivery is getting better or worse.

Kempler said the Level 0 data have been coming in steadily with few reorders required. Masuoka commented that there have been a few unique problems, such as the solar diffuser causing bit flips.

Kempler asked what metrics should be used to track the GDAAC's performance. He would like the emphasis to be more on producing complete days and customer satisfaction, rather than being in near-real time.

2.4 Golden Month Discussion

Justice reported that the PI Processing group discussed starting reprocessing of October data on November 1. It was proposed that hey would use October 15-November 15 and the best available code, with the idea that the code will not be frozen for subsequent periods. At day 24 or so, they will assess how the reprocessing is going and decide what might need to change for the second golden month. These changes could include improved code. Salomonson agreed that there was no reason to freeze the code for all four golden months, and that if each successive golden month got better, then that would be great.

Justice reported that the PI Processing group is discussing how much up-to-date processing needs to be done during the golden month processing to ensure that we would be aware of any instrument problems. The group is considering using granules from validation sites or over the U.S.

Masuoka provided a schedule for golden month reprocessing, including his best knowledge of what code is already available and what could be available for November 1. Of the pending code revisions, perhaps the most critical is the Ocean Group's Level 2 code, which should be available by October 12. The code deals with bugs in the binning process that produce striping. While Masuoka reported that the new code would significantly improve the ocean products, Salomonson cautioned against continually holding out for "just one more revision." He said we just have to go with the best we have available, and know

that future golden months will continue to improve. We need to get something out that people can use.

Masuoka indicated that he needs input from the GDAAC to make sure that his schedule reflects any system down time either for the version 5.5 upgrades or MOS tests.

Salomonson wondered what the group thought of channeling potential funding for improving DIS into an Information Power Grid for distributed processing. Justice replied that he would be hesitant about new development, and suggested one approach might be to examine the utility of a power grid under NewDIS. Issues will be code portability, networks and start up costs.

2.5 SDST Update

Masuoka reported that SDST had version 2 running on eight processors in MODAPS in order to prepare for Aqua MOS tests, which are on schedule for October 17. Currently, it takes two processors about 7 hours to do a day.

The MOS test will run Level 0 on up. SDST plans to run Level 1A and 1B in MODAPS to test for EDOS that everything is working.

Salomonson pointed out that unless MODAPS matches GDAAC exactly, then it is not a valid test of the system. He asked why not just wait and let the GDAAC run the test. Masuoka acknowledged that it is a watered-down test, but that it would still be useful for testing certain things. He believes it is worthwhile to fix anything you can fix before hand.

2.6 Land Update

Justice reported that there will be a request for papers to be submitted for a special edition of Remote Sensing of Environment. Also, he reported that the SAFARI dry season intensive has been a big success.

Several meetings are planned relating to land products validation. There will be a CEOS meeting in October, which will focus heavily on land products validation. The Land Group is also planning to have a land validation meeting a few days before or after the next MODIS Science Team meeting. Finally, there will be a meeting in 2001 under the CEOS Cal/Val subgroup on land products for international coordination.

Salomonson asked about the end of the year transition of land 250-m data into the main data processing system. Justice reported that this was being discussed, and indicated that general production might be good in the big system, while special products might remain in the context of NewDIS development.

Justice reported that organizations in Mongolia and Bangkok were planning on setting up direct broadcast receiving stations. He is unsure what the implications might be for product quality. He asked whether shareware existed for L1, L2 or L3 data products. Murphy responded that the L1 shareware exists and is available through the GDAAC. The L2 and L3 codes are still being developed and will need to be converted to run on a simple platform. Justice stated that shareware for fire, surface reflectance, and vegetative index products were desired and there is an interest from the land team to get involved in developing this capability.

There is a real desire for MODIS land products, especially for 250-m products. There is a large demand for that kind of resolution at the State level. Justice suggested planning some specific outreach events, including an article about land data availability for the ***Earth Observer,*** and also would suggest that ESDIS use the SAFARI data for PR efforts.

2.7 Snow and Ice report

Dorothy Hall reported about the Polar Oceans Advisory Group (PoDAG) meeting she recently attended. Lots of MODIS-related issues were discussed. The upcoming October 13 release of the snow and ice product will be a “silent release”, which means they will inform PODAG members first and let their use of the product flush out any problems.

She reported that there was a lot of discussion at the PoDAG meeting about charging for EOS data. They do not want to do this, but may be under some pressure to so. Data are currently free when accessed via the network, and Kempler estimated that the network is approximately 2/3 saturated. They may go to charging for media such as CD-ROMs or tapes.

Salomonson asked if anyone was looking at the bi-directional nature of snow from MODIS. Hall reported that Andrew Klein is working on that, and will likely have an albedo product for release later this year. Salomonson also wondered if anyone had tried comparing NOAA-L with MODIS snow products. Hall said not yet, but they will.

3.0 Action Items

3.1 New Action Items

1. Montgomery to report at next Technical Team meeting on the schedule for addressing the SRCA problem.

3.2 Action Items Carried Forward

1. Salomonson: Work with Yoram Kaufman and Skip Reber to produce some metrics from the science community to help convince Congress that they shouldn't keep trying to challenge this group by cutting funding support every year.

2. Masuoka and Conboy: Work with Patent Counsel, Legal, and Procurement to resolve issues concerning MODIS Science Team Member software distribution. STATUS: Open. Met with Procurement personnel and Legal on August 28 to discuss data right issues as they relate to the MODIS university contracts. Awaiting decision by Patent Counsel and Legal on course of action.

3. MODIS Science Team: Send updates on MODIS metadata terms/valids to Skip Reber (reber@skip.gsfc.nasa.gov). These are terms that enable users to search MODIS data. This is part of a request to the Terra Instrument teams to update metadata terms. STATUS: This action is still open.

4. Discipline Leads: Send feedback to Murphy and Guenther on setting flags for dead (non-functional) detectors while they are set to zero. Currently, MCST would like MODIS Science users to provide feedback on which detectors are dead. STATUS: This action is still open.

5. Discipline Leads: Send MODIS Data Product table updates to Skip Reber with a copy to Murphy. The MODIS Data Products table is on the Web at: http://eosdatainfo.gsfc.nasa.gov/eosdata/terra/modis/modis_dataprod.html. STATUS: This action is still open.

6. Masuoka: Represent MODIS concerns on data throughput to EDOS. STATUS: The Review Committee is now preparing a report articulating the impacts to the community.